

Théophile Demazure

Assistant Professor (June 2023)

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Education

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| 2018-2023 | Ph.D. in Administration, Information Technologies under the supervision of Prof. Pierre-Majorique Léger and Prof. Marc Fredette, HEC Montréal (Best Doctoral Thesis Award, 2023) |
| 2017-2018 | M.Sc. in Information Technologies, HEC Montréal, under the supervision of Prof. Pierre-Majorique Léger and Prof. Gilbert Babin, HEC Montréal. (Best Thesis Award, 2018) |
| 2013-2016 | Bachelor's in Business Administration, HEC Montréal |

Research

Doctoral Thesis

Title: Dual perspective on Mental State Inferences in Human-Computer Interaction

Composed of three essays:

- Neurophysiological Measurement of Mental States for Human-Computer Interaction and Adaptation.
- End-to-end Deep Learning Approaches to Mental Workload Classification using Electroencephalography in HCI, a Literature Review and Systematic Model Benchmarking.
- Oriented-Attention Measurement in Multisensory Human-Computer Interaction using Electroencephalography.

Committee: Prof. Pierre-Majorique Léger, Prof. Marc Fredette, Prof. Luc Cassivi (UQAM), Prof. Laurent Charlin (HEC Montréal). Jury: Prof. Anthony Vance (Virginia TECH).

Thesis defended on October 27, 2023.

Journal Publications

- Karran, A. J., **Demazure, T.**, Hudon, A., Senecal, S., & Léger, P. M. (2022) Designing for Confidence: The Impact of Visualizing AI Decisions. *Frontiers in Neuroscience*, 951. Special Issue in Neuroscience and Information Systems
- **Demazure, T.**, Karran, A., Leger, P. M., Labonte-LeMoyne, E., Senecal, S., Fredette, M., & Babin, G. (2021). Enhancing Sustained Attention: A Pilot Study on the Integration of a Brain-Computer Interface with an Enterprise Information System. *Business & Information Systems Engineering (BISE)*.
- Karran, A. J., **Demazure, T.**, Leger, P. M., Labonte-LeMoyne, E., Senecal, S., Fredette, M., & Babin, G. (2019). Toward a hybrid passive BCI for the modulation of sustained attention using EEG and fNIRS. *Frontiers in Human Neuroscience*, 13, 393.

Peer-reviewed Conference Publications

- Delisle, J.F., **Demazure, T.**, Nabil H., & Léger, P.M. (2023). Using AI and neuroscience in immersive 3D flight simulation device to accelerate pilot training. In *Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC)*
- **Demazure, T.**, Karran, A. J., Boasen, J., Léger, P. M., & Sénécal, S. (2021, July). Distributed remote EEG data collection for NeuroIS research: a methodological framework. In *International Conference on Human-Computer Interaction* (pp. 3-22). Springer, Cham.
- Hudon, A., **Demazure, T.**, Karran, A., Léger, P. M., & Sénécal, S. (2021, June). Explainable Artificial Intelligence (XAI): How the Visualization of A.I. Predictions Affects User Cognitive Load and Confidence. In *NeuroIS Retreat* (pp. 237-246). Springer, Cham.
- **Demazure, T.**, Karran, A., & Léger, P. M. (2021, June). Continuing Doctoral Student Training for NeuroIS and EEG During a Pandemic: A Distance Hands-On Learning Syllabus. In *NeuroIS Retreat* (pp. 184-191). Springer, Cham.
- Guertin-Lahoud, S., Coursaris, C., Boasen, J., **Demazure, T.**, Chen, S. L., Dababneh, N., & Leger, P. M. (2021). Evaluating User Experience in Multisensory Meditative Virtual Reality: A Pilot Study.
- **Demazure, T.**, Karran, A., Labonté-LeMoyne, É., Léger, P. M., Sénécal, S., Fredette, M., & Babin, G. (2019). Sustained attention in a monitoring task: Towards a neuroadaptive enterprise system interface. In *Information Systems and Neuroscience* (pp. 125-132). Springer, Cham.

Publications Under Review

- Ortiz de Guinea, A. & **Demazure, T.** (2024, à paraître). “Machine Learning in Information Systems Research: Current and Future Applications, Development, and Challenges”. Chapitre dans *The Routledge Companion to Management Information Systems* (2e éd.), Galliers, R. D. & Sten, M. K. (éd.), Routledge, Taylor & Francis Group.
- Ouimet, A. & **Demazure, T.** (2024). “We Need Individuals to Take the Lead: Psychological Flexibility as an Internalized Mechanism Toward Green IS Behaviors”, ICIS 2024
- Grange, C., **Demazure, T.**, Ringeval M., Bourdeau, S., & Martineau, C. (2024). “The Human-GenAI Value Loop in Human-Centered Innovation: Beyond the Magical Narrative”

Poster Presentation in Peer-reviewed Conference

- **Demazure, T.**, Karran, A., Léger, P.-M., Fredette, M. (2021). A Deep Learning End-to-End Approach to Mental Workload Estimation from EEG signals in flight simulation training, Neuroergonomics Conference 2021. [Extended Abstract Accepted]
- Karran, A., Sénécal S., **Demazure, T.**, Suri A., Freve-Guerin, E., De Celles E., Fredette M. (2019). Tech3lab adaptive systems group for the research and development of neuroadaptive information systems (NeuroIS)», Society for Neuroscience 2019 [Extended Abstract Accepted]
- Freve-Guerin, E., Léger, P. M., Karran, A., **Demazure, T.**, Fredette M., Sénécal S. & Suri A. (2019), Cognitive Load Adaptive Website Interfaces: An Exploratory Study in the Context of E-commerce, DESRIST 2019-14th International Conference on Design Science Research in Information Systems and Technology, DESRIST 2019, Worcester, MA, USA, June 4–6, 2019, Proceedings

Invited Speaker Presentations

- May 2022. Presentation at the Groupe de Recherche en Systèmes d'information (GRéSI): Demazure, T., Karran, A., Leger, P. M., Labonte-LeMoyné, E., Senecal, S., Fredette, M., & Babin, G. (2021). Enhancing Sustained Attention: A Pilot Study on the Integration of a Brain-Computer Interface with an Enterprise Information System. *Business & Information Systems Engineering*
- June 2018. Presentation at the 2018 ERPsim User Group Meeting: Using ERPsim for Research, Creating Adaptive Systems

Innovation

- Univalor, VAL-1696, (2019). "ThReADS –Threshold Reactive Adaptive Dynamic Spectrum for real-time EEG classification."

Industrial Reports

- **Demazure, T.**, Bouvier, F., Leger, P. M., Sénécal, S., Fredette, Marc., Coursaris, C. (2022), The impact of haptics (HFVK) on the performance of racing drivers in simulators, a neurophysiological and perceived perspective. Presented to D-BOX Inc.
- **Demazure, T.**, Bouvier, F., Leger, P. M., Sénécal, S., Fredette, Marc., Coursaris, C. (2022), The impact of haptics (HFVK) on racing drivers' behaviors in simulators. Presented to D-BOX Inc.
- **Demazure, T.**, Giroux, A., Bouvier, F., Leger, P. M., Sénécal, S., Fredette, Marc., Coursaris, C. (2022), Study on the impact of haptics (HFVK) on the viewing of a car race by racing drivers. Presented to D-BOX Inc.
- **Demazure, T.**, Karran, A., J., Leger, P-M. (2020), Cognitive Load Classification in Simulation Training, Presented to CAE Inc.
- Karran, A., J., Leger, P-M., **Demazure, T.** (2020), Eye Tracking pre-test evaluation, Presented to CAE Inc.
- Karran, A., J., Leger, P-M., **Demazure, T.** (2020), Crew Resource Management: A Framework for the Analysis of Biometric and Telemetry Data in Simulated Flight Training, Presented to CAE Inc.
- Leger, P-M., Karran, A., J., **Demazure, T.** (2019), A Joint R&D Experimental Framework: Review of Biometrics for in-flight measurement of affect and crew workload, Presented to CAE Inc.

Media

- Presentation of the research project and results published in the article "Enhancing sustained attention: A pilot study on the integration of a brain-computer interface with an enterprise information system" in CSience magazine. A scientific media on AI in Quebec for professionals and institutions (<https://www.cscience.ca/2021/06/02/comment-rester-vigilant-dans-un-environnement-robotise>).
- Discussion on my projects and research interests in the podcast Mon Carnet by Bruno Guglielminetti and Jean-Francois Poulin (10-05-2021) (<https://soundcloud.com/moncarnet/mon-carnet-du-5-novembre-2021>).

- Article about my doctoral thesis in the journal Le Devoir (09-23-2021) (<https://www.ledevoir.com/societe/science/641628/simuler-la-realite-pour-eviter-les-accidents>)

Research Awards

- Best Doctoral Thesis Award at HEC Montréal, 2023
- GReSI Excellence Award 2021 for publication in a peer-reviewed IT journal
- Best Paper Award pour le 20th Annual Pre-ICIS Workshop on HCI Research in MIS "Evaluating User Experience in Multisensory Meditative Virtual Reality: A Pilot Study"
- Best Master's Thesis Award at HEC Montréal, 2018

Grants and Scholarships

- 2024-2026. IVADO Professorship, Principal recipient.
- 2021-2024. Doctoral Research Scholarship - Fonds de recherche du Québec – Nature et technologies (FRQNT), 70 000 \$, Principal recipient.
- 2020-2024. IVADO Doctoral Excellence Scholarship, 100 000 \$, Principal recipient.
- 2018-2022. Research Scholarship – Industrial Research Chair in User Experience, ~ 45 000 \$, Principal recipient.

Student Supervisions

Supervision of doctoral theses: Victoria Okesipe (2024), Lily Ngoc Dong (2024)

Supervision of master's theses: David Tessier (2023), Rayane Benhenni (2024), Kamila Morad (2024), Sanzhi Yap (2024), Charles Leonard Thiffault (2024), Andrada Toma (2024)

Supervision of at AIMS/IVADO: Seynabou Ndour (2022), Victoria Okesipe (2023)

Supervision of directed projects: Tim Delavoët (2024), Claire Henry (2024)

Teaching

Lecturer

- Winter 2024. Assistant Professor – Developing Artificial Intelligence Applications – Master's
- Winter 2024. Assistant Professor – Selecting, Implementing, and Using an ERP System – Bachelor's

- Fall 2023. Assistant Professor – Selecting, Implementing, and Using an ERP System – Bachelor's
- Winter 2023. Lecturer – ERP and Integrated Business Management – Bachelor's
- Fall 2022. Lecturer – ERP and Integrated Business Management – Bachelor's
- Fall 2020. Lecturer – Management Information Systems – Certificate

Pedagogical Awards

- Teaching Excellence Award 2023, HEC Montréal

Service

Reviewer for scientific journals and conferences

- ICIS, CHI, Scientific Reports, Neuroergonomics Conference, European Conference on Information Systems (ECIS), Americas Conference on Information Systems (AMCIS)

Committee

- 2024-2025. Member of evaluation committees. Fonds de recherche du Québec - Nature et technologies. Doctoral research scholarships in Information and Communication Technologies (B2 05A G6).
- 2024-2025. Member of the M.Sc. and Ph.D. scholarship committees, HEC Montréal

Conference

- 2025. Workshops Co-Chairs, AMCIS.

Professional Development

Trainings

- 2020, 2024. Scientific Writing Workshop, HEC Montréal
- June 2019. 19th EEGLAB Workshop
- 2017. ERPsim Instructor Certification level 1 et 2
- 2016. SAP Certification — TERP10 Integration of Business Process in SAP ERP

Professional Experience

Relevant Work Experience

- 2019-2022. Scientific Consulting.
 - Research on human factors in the aerospace field: biometric assessments in pilot training using statistical methods and machine learning. Scientific consultation in AI and Biometrics, CAE in collaboration with Singapore Airlines.
- 2017-2022. Assistant de recherche. HEC Montréal – Tech3Lab
 - PhD: Technologies de l'Information et Neurosciences (2021). MBA: Introduction to I.T. (2022, 2021, 2020). BAA: Business Application Development (2017, 2018)
- 2016 – 2018. Analyste SAP / Assistant de recherche. HEC Montréal —Laboratoire ERPsim